

# 18. Exercise Testing

**Bruce Protocols:** (Each stage 3 minutes)

	METS	MPH	% Grade	O2 Cost ml/kg/min
Modified Stage 0	2	1.7	0%	7
Modified Stage ½	4	1.7	5%	14
Standard Stage 1	5	1.7	10%	17
Standard Stage 2	7	2.5	12%	24
Standard Stage 3	10	3.4	14%	35
Standard Stage 4	13	4.5	16%	45
Standard Stage 5	18	5.0	18%	56

**Manual Protocol:** (anything you set, goal is just trying to get patient to walk 6 minutes)

**Exercise Levels:**

Protocol Bruce Age	METS	Minutes
20	11.5	11.0
25	11.0	10.5
30	10.5	9.5
35	10.0	9.0
40	9.5	8.5
45	9.0	8.0
50	8.5	7.5
55	8.0	7.0
60	7.6	6.5
Modified Bruce		
65	7.0	9.0
70	6.0	8.0
75	6.0	7.0
80	4.8	6.0
85	4.0	5.5

1. In general, attempt to achieve >85% of maximal heart rate: max HR ~ 220 - Age
2. Bayesian Theory: The pretest risk of disease affects the sensitive and specificity.
3. The inability to exercise has very grave prognostic implications, with or without coronary disease.

**ISCHEMIA:**

- a) ST depression >1 mm of horizontal or downsloping in 2 associated leads
- b) ST Elevation = Suggest severe ischemia or infarct (In non infarcted leads)  
(Infarcted area the ST elevation = LV aneurysms)
- c) Pseudonormalization of T waves = Non diagnostic
- d) Area of ST depression does not localize the site of myocardial ischemia

**ADVERSE PROGNOSIS AND MULTIVESSEL CORONARY ARTERY DISEASE:**

- a) ST segment depression > 2 mm downsloping, starting at < 6 METS, involving > 5 leads, persisting > 5 minutes into rest.
- d) Exercise-induced ST elevation (except avR)
- e) Angina pectoris during exercise
- f) Reproducible sustained (>30 s) or symptomatic ventricular tachycardia

